

# Norepinephrine bitartrate (Levophed)

**Class:** Vasoconstrictor

**Therapeutic Actions/Pharmacodynamics:** Stimulates alpha receptors in the peripheral vasculature, producing vasoconstriction-related increases in system blood pressure. Concurrent beta receptor stimulation may produce increases in heart rate and mild bronchodilation, though norepinephrine is a weaker beta stimulator than dopamine.

**Indications:** Hypotension (adult = systolic < 100mmHg) - due to cardiogenic, septic, or neurogenic shock either refractory to intravascular fluid boluses or in which intravascular fluid bolusing is contraindicated (e.g. pulmonary edema).

**Contraindications:** Hypertension

**Precautions:** In the setting of tachydysrhythmia-induced cardiogenic shock, treat per Unstable Tachycardia protocol. Ensure aggressive fluid resuscitation is accomplished (unless contraindicated) prior to norepinephrine use.

Norepinephrine should be given into a large, patent vein. The vein of choice for EMS use is the antecubital vein, as this will decrease the risk of overlying skin necrosis. Do not administer norepinephrine through an IV in the hand or leg. These veins are more likely to be affected by vaso- occlusive diseases and more prone to ischemic complications. Administration through IO in the leg is permitted.

If local extravasation occurs, notify the receiving physician of the following FDA advisement of antidote to extravasation ischemia:

"To prevent sloughing/necrosis in peripheral ischemic areas promptly use syringe w/ fine hypodermic needle to liberally infiltrate area w/ 10-15 mL saline solution containing 5-10 mg phentolamine; sympathetic blockade causes immediate conspicuous local hyperemic changes if area infiltrated w/in 12 hours."

Safety in pregnancy not firmly established, though when clinically indicated the benefits outweigh risks. Safety in pediatrics not firmly established and OLMCP is to be consulted prior to pediatric usage.

Avoid mixing in normal saline, as NS promotes loss of potency through oxidation of norepinephrine.

**Pharmacokinetics:** Onset of action within 5 minutes after IV/IO infusion initiated. Rapid metabolism, requiring ongoing IV/IO infusion to maintain clinical effects.

**Adverse/Side Effects:** Few, though at higher doses, symptoms may include headache, palpitations, tachycardia, chest pain, and eventual hypertension. Bradycardia can result reflexively from an increase in blood pressure.

**Dosage: Adult Cardiogenic/Septic/Neurogenic Shock** (as described above)

Start at 2-4 mcg/minute - see dosage chart - titrated to a systolic B/P  $\geq$  100 mmHg.

Maximum infusion rate is 12 mcg/minute.

**Pediatric Cardiogenic/Septic/Neurogenic Shock**

Consult with OLMCP for use and dosing.

**How Supplied:** 4mg/4ml ampule or vial. **Use only 2ml in a 250ml bag of D5W.** (8mcg/ml concentration)

**Norepinephrine Infusion Adult Dosage Chart**

**Rates reflect using a microdrip (60drops/ml) set:**

mcg/min	2	3	4	5	6	7	8	9	10	11	12
drops/min	15	22	30	37	45	52	60	67	75	82	90